ENGELN PORTABLE DIATHERMY INSTRUCTIONS

LINE

This outfit is built to operate on the line conditions shown on the yellow card attached to the main switch of the Portable. The instructions on this card should be carried out immediately in order to complete our service record. All communications regarding the outfit should incorporated the serial number of the machine so that our Organization can take care of you without delay.

GUARANTEE

This apparatus without accessories such as glass electrodes, etc. is guaranteed against mechanical and electrical defects due to workmanship or defective material. Our obligation under this guarantee is limited to making good the defective part within a period of one year, providing the defective part is returned to us with transportation charges prepaid. The Milliammeter on this outfit bears the guarantee of the manufacturer and is subject to their guarantee conditions.

All necessary repairs on this outfit, due to carelessness or misuse, will be charged to you at a minimum rate.

EXPLANATION OF CONTROL PANEL. (Refer to Blue Print)

1. "Meter In" This terminal forms one Diathermy outlet and must be used with one of the other three (low, medium or high voltage) Diathermy outlets to complete the circuit.

2. "High Voltage" Diathermy terminal - to complete circuit to patient use outlets #1 and #4. More often used in Auto Condensation.

3. "Medium Voltage" Diathermy terminal - to complete circuit to patient use outlets #1 or #3. General Range of Treatment.

4. "Low Voltage" Diathermy terminal - to complete circuit to patient use outlets #1 and #2. Low Voltage work such as Eye, Ear, Nose and Throat work or electro-coagulation.

5. "Double Scale Milliammeter - plugs into position. Use high scale when milliamperage will exceed 2000.

6. "Meter Switch" Used to change milliammeter reading from low to high scale BEFORE or DURING treatment if desired.

7. "Meter Out" Used in place of "Meter In" terminal. Form one Medical or Surgical Diathermy outlet when meter reading is not desired. Used with low, medium or high voltage outlet.

8. "High Frequency Terminal" Used for desiccation, fulguration, vaccum and non-vacuum electrodes.

9. "Multiple Spark Gap" Four individual adjustments. Usually adjusted so that distance between sparking points are equal. The gaps are closed at start of treatment and gradually opened to increase the current passing through circuit.

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10. "Voltage Selector" for lowest voltage, button #1 - for highest, button #6.

11. "Line Plug" main line inlet for specified current.

13. "Foot Switch Connection" when using foot switch, the main switch should be in OFF position.

THE METER

The double scale Thermocouple type is not affected by room temperature changes, and is so arranged that the change from high to low scale can be made without shutting off the machine to make the change.

In case your Diathermy cords or electrodes are crossed with current on and meter has burned out, it may be removed by an upward pull and sent to us for immediate replacement. The machine may be operated by using the "meter out" terminal and the amount of milliamperage must be based on the tolerance of the patient.

THE SPARK GAP

When the four sparking points are closed there is a direct short circuit on the transformer and no discharge from any outlet.

As these points are gradually separated more milliamperage is obtained up to the point where they are too widely separated and the voltage is insufficient to span the gap and the machine ceases to function. Therefore always keep the sparking points reasonably close together and obtain a smooth even sparking. More voltage to allow for further separating of sparking points is obtained by moving selector switch to next step.

VOLTAGE SELECTOR

Controls the available primary voltage by six steps (with dead contact between each step). Always set selector switch on proper steps to obtain the desired milliamperage without causing the sparking points on spark gap to sputter.

OPERATION

1. Remove extra cords and electrodes from control panel, and see that main switch is in OFF position.

2. Connect main line cord to "line plug" terminal on machine and screw plug into lamp or wall receptacle as specified.

3. See that sparking points are closed and selector switch is on one of the six steps.

4. Your machine is ready for operation and by turning on main switch the circuit is closed.

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GENERAL

Using block tin, size 6" x 6" on one side and block tin size 5" x 5" on the other side of the meat, indicates that the maximum heat will be closer to the 5" x 5" electrode. This fact allows you to select the size of electrodes desired to cause a maximum heat at a certain point within the tissue. If the two electrodes were the same size the maximum heat would be in a plane equal distance from each electrode.

In Diathermy the smaller electrode is known as the active one and the maximum amount of milliamperage usually allowed should be approximately 50 M.A. per square inch of the active electrode. Example: 5" x 5" equals 25 square inches equals 1250 milliamperes. The tolerance of your patient should always be considered.

AUTO CONDENSATION.

1. Connect pad to terminal #1 by means of Diathermy Cord.

2. Place patient on pad and support head by means of pillow.

3. Have patient hold auto condensation handle in both hands and connect handle to terminal #3. Place pillow on body so that hands can rest on it and not come in contact with body.

4. Start treatment in usual manner gradually building up milliamperage to desired point. Usually the milliamperage is not more than 500.

CAUTION

1. Always maintain a smooth even sparking between the Tungsten Points.

2. Check all connections to patient before pulling main switch.

3. Keep sparking points clean. The Spark Gap is arranged so that it can be easily cleaned by using #1 grade emery cloth after removing thumb screws.

4. Be sure line current is exactly the same as the rating of the apparatus.

5. Do not allow the electrodes to touch while the current is on as this causes a direct short circuit and might burn out your milliammeter.

If a slight faradic sensation or shock is received from the terminals or metal connections on the control panel, reverse the polarity by removing the line plug from the socket and turning it through one half turn so that the relative position of the connections is reversed.

THE ENGELN ELECTRIC COMPANY
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Cleveland, Ohio.

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EXAMPLE FOR EXPERIMENTAL OPERATION.

1. Place piece of meat about 2" thick and 6" square on piece of 6" x 6" block tin, which acts as one electrode.

2. Connect one end of Diathermy cord to block tin and the other to "meter in" terminal on machine.

3. Place piece of tin, size 5" x 5" on top of meat, connect one end of second Diathermy cord to this block tin and the other to "low voltage" terminal in machine.

4. Your "patient" circuit is complete when the Diathermy cords are connected as described above. Set voltage selector on Step #1, close sparking points, and turn on main switch. The milliammeter will register by increasing the distance between sparking points. Use step 2 etc. of voltage selector for higher milliamperage readings.

5. The meat represents the human tissue to be treated and allows the operator to experiment with the different settings of spark gap voltage selector, and also use the other Diathermy outlets (medium and high voltage) in order to become familiar with the operation.

In treating the human body the operating procedure is the same, Always start with a zero reading of the milliammeter, and increase gradually as this is the sedative technique which is universally used. The electrodes are placed so that the area to be treated is between. The electrodes are carefully shaped, trimmed to eliminate
s sharp edges, and covered with contact jelly to assure good contact.

6. Watch the milliamperage reading so that the needle remains on the scale at all times. Turn to high scale if necessary.

7. To try surgical Diathermy or electro-coagulation remove terminal of Diathermy cord now in "meter in" receptacle, and place in " "meter out" receptacle.

8. Remove block tin from top of meat and also Diathermy cord.

9. Connect electro-coagulation cord. (Cat. No. 2180) to "low voltage" terminal on machine, place needle in cord handle and hold handle so that the cord extends back over hand. It may be found more convenient to give the cord one or two loose turns around the wrist.

10. Use foot switch (Cat. No. 2181) for closing and opening circuit.

11. Decrease and increase as before and experiment with coagulation depth of settings by making contact with the needle and pressing into meat, etc. This will familiarize you with the current action.

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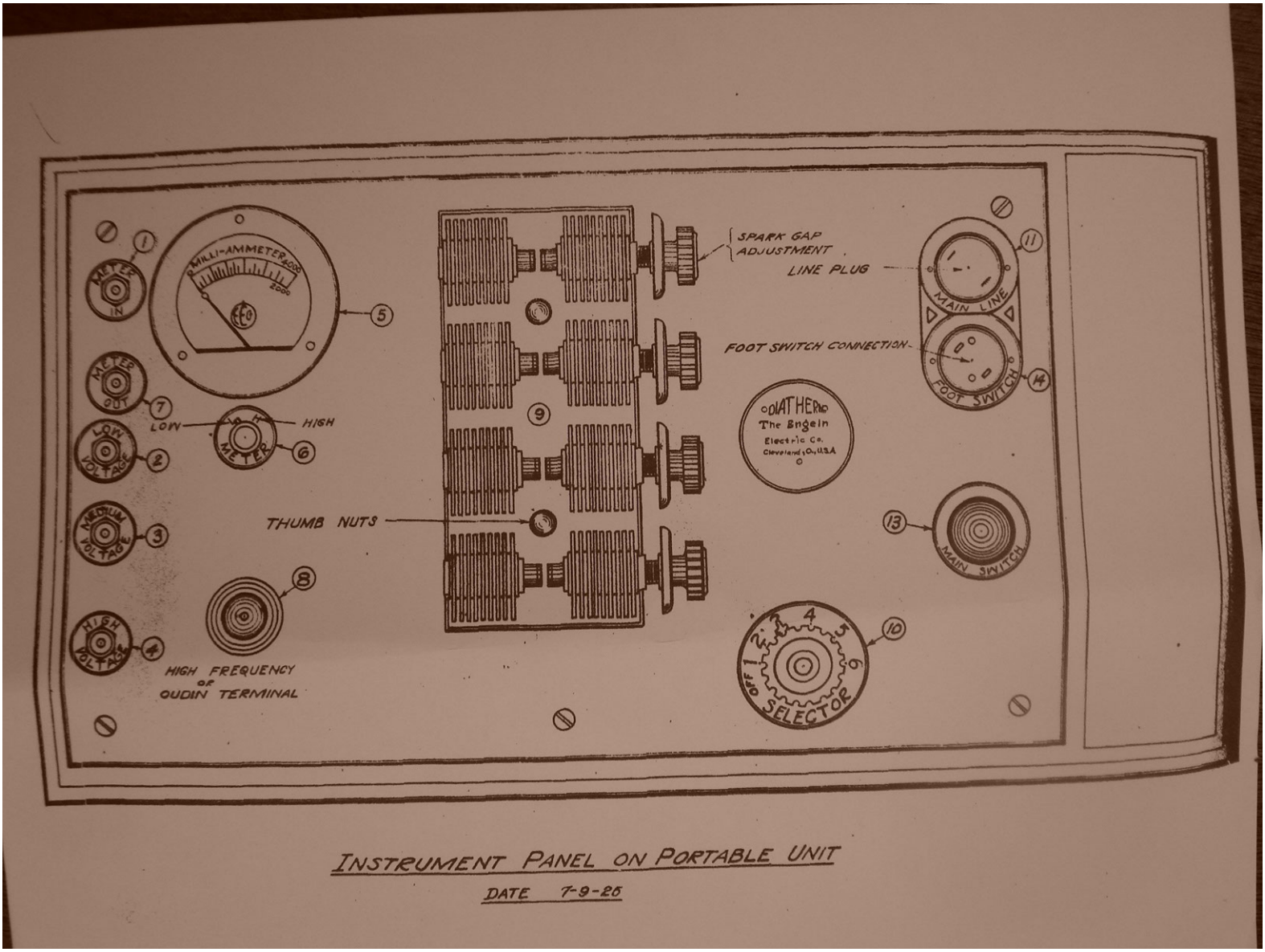

INSTRUMENT PANEL ON PORTABLE UNIT

DATE 7-9-26

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